



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/534,695

05/13/2005

Masashi Nakamura

1592-0155PUSI

8694

2292

7590

08/08/2006

BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH, VA 22040-0747

EXAMINER

HARRISON, MONICA D

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 08/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.	Applicant(s)	
10/534,695	NAKAMURA ET AL.	
Examiner	Art Unit	
Monica D. Harrison	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 10-27 is/are pending in the application.
- 4a) Of the above claim(s) 1-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 10-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5/13/05
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Examiner acknowledges claims 1-9 have been cancelled. Newly admitted claims 10-27 have been entered.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 10-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Oida et al (5,647,917).

2. Regarding claim 10, Oida et al discloses an epitaxial growth method comprising: supporting a substrate for growth with a substrate supporter (Figure 2, support is the lower substrate), forming a compound semiconductor layer comprising 3 or 4 elements on the substrate (Figure 2) for growth by metal organic chemical vapor deposition (column 1, lines 27-34), polishing the substrate (column 5, line 44) so that an angle of gradient is 0.000 to 0.030 or 0.040 to 0.100 with respect to (100) direction in an entire effective area of the substrate (column 6, lines 52-67 thru column 7, lines 1-40), and forming the compound semiconductor layer to be 0.5  $\mu\text{m}$  thick or more on the substrate by using the substrate for growth (Figure 2).

3. Regarding claim 11, Oida et al discloses forming a buffer layer on the substrate for growth, and forming the compound semiconductor layer on the buffer layer (Figure 2, *InP*).

4. Regarding claim 12, Oida et al discloses wherein the compound semiconductor layer is a III-V group compound semiconductor layer containing at least As (Figure 2, *InGaAs*).

5. Regarding claim 13, Oida et al discloses wherein the compound semiconductor layer is a III-V group compound semiconductor layer containing at least As (Figure 2, *InGaAs*).

6. Regarding claim 14, Oida et al discloses wherein the compound semiconductor layer is an InGaAs layer or an InAlAs layer (Figure 2, *InGaAs*).

7. Regarding claim 15, Oida et al discloses wherein the compound semiconductor layer is an InGaAs layer or an InAlAs layer (Figure 2, *InGaAs*).

8. Regarding claim 16, Oida et al discloses wherein the substrate for growth is a semiconductor crystal substrate having dislocation density of  $5000\text{cm}^{-2}$  or less (column 6, lines 52-67 thru column 7, lines 1-40).

9. Regarding claim 17, Oida et al discloses wherein the substrate for growth is a semiconductor crystal substrate having dislocation density of  $5000\text{cm}^{-2}$  or less (column 6, lines 52-67 thru column 7, lines 1-40).

10. Regarding claim 18, Oida et al discloses wherein the substrate for growth is a semiconductor crystal substrate having dislocation density of  $5000\text{cm}^{-2}$  or less (column 6, lines 52-67 thru column 7, lines 1-40).

11. Regarding claim 19, Oida et al discloses wherein the substrate for growth is a semiconductor crystal substrate having dislocation density of  $5000\text{cm}^{-2}$  or less (column 6, lines 52-67 thru column 7, lines 1-40).

12. Regarding claim 20, Oida et al discloses wherein the substrate for growth is an InP substrate (Figure 2, *InP*).

13. Regarding claim 21, Oida et al discloses wherein the substrate for growth is an InP substrate (Figure 2, *InP*).

14. Regarding claim 22, Oida et al discloses wherein the substrate for growth is an InP substrate (Figure 2, *InP*).

15. Regarding claim 23, Oida et al discloses wherein the substrate for growth is an InP substrate (Figure 2, *InP*).

16. Regarding claim 24, Oida et al discloses a substrate for epitaxial growth used for an epitaxial growth method in which a compound semiconductor layer comprising 3 or 4 elements is formed on the substrate for growth (Figure 2) by metal organic chemical vapor deposition (column 1, lines 27-34), wherein an angle of gradient is 0.000 to 0.030 or 0.040 to 0.100 with respect to (100) direction in an entire effective area of the substrate (column 6, lines 52-67 thru column 7, lines 1-40).

17. Regarding claim 25, Oida et al discloses wherein the substrate is a semiconductor crystal substrate having dislocation density of  $5000\text{cm}^{-2}$  or less (column 6, lines 52-67 thru column 7, lines 1-40).

18. Regarding claim 26, Oida et al discloses wherein the substrate is an InP substrate (Figure 2, *InP*).

19. Regarding claim 27, Oida et al discloses wherein the substrate is an InP substrate (Figure 2, *InP*).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica D. Harrison whose telephone number is 571-272-1959. The examiner can normally be reached on M-F 7:00am-3:30pm.


Art Unit: 2813

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Monica D. Harrison  
AU 2813

mdh  
August 4, 2006

  
CARL WHITEHEAD, JR.  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800